

WHAT IS CLAIMED IS:

1. A device which has a semiconductor device and a micromachine, comprising:

a semiconductor layer on which the semiconductor
5 device is formed; and

a substrate on which the micromachine is formed,
wherein said semiconductor layer and substrate
are stacked, and said semiconductor layer is obtained
by separating, at a separation layer, a member which
10 has the separation layer under said semiconductor
layer.

2. A device which has a semiconductor device and a micromachine, comprising:

a semiconductor layer on which the semiconductor
15 device is formed; and

a substrate on which the micromachine is formed,
wherein said semiconductor layer has a first
surface and a second surface, the first surface is
bonded to said substrate directly or through a bonding
20 layer, and the second surface adjoins a layer whose
structure is more fragile than said semiconductor
layer.

3. The device according to claim 2, wherein the
layer having the fragile structure includes one of a
25 porous layer and an ion-implanted layer.

4. A device which has a semiconductor device and a micromachine, comprising:

a semiconductor layer on which the semiconductor device is formed; and

a substrate on which the micromachine is formed, wherein said semiconductor layer and substrate
5 are stacked, and said semiconductor layer is formed by epitaxial growth.

5. The device according to claim 4, wherein said semiconductor layer has a first surface and a second surface, the first surface is bonded to said substrate
10 directly or through a bonding layer, and the second surface is bonded to an insulator directly or through a bonding layer, or adjoins the insulator.

6. The device according to claim 2, wherein the bonding layer includes one of an adhesive and an
15 adhesion layer.

7. A device which has a semiconductor device and a micromachine, comprising:

a semiconductor layer on which the semiconductor device is formed; and

20 a substrate on which the micromachine is formed, wherein said semiconductor layer and substrate are stacked, and said semiconductor layer has a thickness of not more than 50 μm .

8. A device which has a semiconductor device and a
25 micromachine, comprising:

a semiconductor layer on which the semiconductor device is formed; and

a substrate on which the micromachine is formed,
wherein said semiconductor layer and substrate
are stacked, and said semiconductor layer has a
thickness of not more than 30 μm .

5 9. The device according to claim 1, wherein the
micromachine includes at least one of a switch, a
variable condenser, and an inductor.

10. The device according to claim 1, wherein a
semiconductor circuit is formed on said semiconductor
10 layer, and the semiconductor circuit and micromachine
comprise at least part of a radio communication device.

11. A substrate comprising:

a semiconductor layer on which a circuit is
formed; and

15 an antenna substrate on which antennas are
formed,

wherein said semiconductor layer and antenna
substrate are bonded together, and said semiconductor
layer is formed by separating, at a separation layer, a
20 substrate which includes the separation layer.

12. The substrate according to claim 11, wherein said
semiconductor layer has a film thickness of not more
than 50 μm .

13. The substrate according to claim 11, wherein said
25 semiconductor layer has a film thickness of not more
than 30 μm .

14. The substrate according to claim 11, further

comprising a bonding layer which bonds together said semiconductor layer and antenna substrate.

15. The substrate according to claim 14, wherein said bonding layer is an adhesive.

5 16. The substrate according to claim 11, wherein the antennas are spiral antenna coils.

17. The substrate according to claim 11, wherein the circuit is electrically connected to the antennas and uses the antennas to transmit and receive radio waves.

10 18. A method of manufacturing a device which has a semiconductor device and a micromachine, comprising:

a step of preparing a member which has a semiconductor layer and a separation layer and in which the semiconductor layer is arranged on the separation

15 layer;

a step of preparing a substrate on which the micromachine is formed; and

a step of bonding a side of the member having the semiconductor layer to the substrate directly or

20 through a bonding layer to manufacture a bonded substrate stack.

19. The method according to claim 18, further comprising a step of separating the bonded substrate stack at the separation layer.

25 20. The method according to claim 18, wherein in the step of preparing the member, the separation layer is formed by anodization or is formed by ion implantation.

21. The method according to claim 18, wherein the bonding layer includes one of an adhesive and an adhesion layer.

22. The method according to claim 18, wherein
5 the step of preparing the substrate further comprises a step of preparing an antenna substrate on which an antenna is formed, and

the step of manufacturing the bonded substrate stack further comprises a step of bonding the side of
10 the member having the semiconductor layer to the antenna substrate directly or through a bonding layer to manufacture a bonded substrate stack.

23. A method of manufacturing a substrate, comprising:

15 a step of preparing a member which has a semiconductor layer and a separation layer and in which the semiconductor layer is arranged on the separation layer;

a step of preparing an antenna substrate on which
20 an antenna is formed; and

a step of bonding a side of the member having the semiconductor layer to the antenna substrate directly or through a bonding layer to manufacture a bonded substrate stack.

25 24. The method according to claim 23, further comprising a step of separating the bonded substrate stack at the separation layer.